

WHAT IS CLAIMED IS:

1. A coaxial resonator comprising:  
an inner conductor formed on an outer surface of a columnar element;  
a dielectric element having a hole formed therein, the columnar element  
being disposed in the hole; and  
an outer conductor formed on an outer surface of said dielectric element.
2. A coaxial resonator according to claim 1, wherein said inner conductor  
comprises a plurality of helical lines.
3. A coaxial resonator according to Claim 1, wherein said inner conductor  
has a thin-film, multi-layer electrode structure in which thin-film conductor layers  
and thin-film dielectric layers are alternately laminated.
4. A coaxial resonator according to Claim 3, wherein said inner conductor  
comprises a plurality of helical lines.
5. A coaxial resonator according to Claim 1, 2, 3 or 4, wherein said outer  
conductor is formed by alternately laminating thin-film conductor layers and thin-  
film dielectric layers.
6. A coaxial resonator according to Claim 5, wherein the phase constants of  
lines for the thin-film conductor layers are substantially equal in said inner conductor

and said outer conductor.

7. A coaxial resonator according to Claim 1, further comprising a non-conducting element disposed between said columnar element and said dielectric element.

8. A filter comprising:

a plurality of coaxial resonators, each coaxial resonator comprising:

an inner conductor formed on an outer surface of a columnar element;

a dielectric element having a hole formed therein, the columnar element being disposed in the hole; and

an outer conductor formed on an outer surface of said dielectric element; and

an input/output device coupled to a predetermined coaxial resonator of said plurality of coaxial resonators.

9. A filter comprising:

a plurality of columnar elements, each columnar element having an inner conductor formed on an outer surface thereof;

a dielectric element having a plurality of holes formed therein, a respective one of said columnar elements being disposed in each said hole to form a corresponding coaxial resonator; and

an input/output device coupled to a predetermined coaxial resonator of said

coaxial resonators.

10. A duplexer comprising:

a transmission filter disposed between a transmission signal input port and a transmission/reception signal input/output port; and

a reception filter disposed between the transmission/reception signal input/output port and a reception signal output port,

wherein at least one of said transmission filter and said reception filter includes a plurality of coaxial resonators, each coaxial resonator comprising:

an inner conductor formed on an outer surface of a columnar element;

a dielectric element having a hole formed therein, the columnar element being disposed in the hole; and

an outer conductor formed on an outer surface of said dielectric element; and

an input/output device coupled to a predetermined coaxial resonator of said plurality of coaxial resonators,

said input/output device being coupled to a corresponding one of said ports.

11. A communication device comprising:

a high-frequency circuit comprising a transmission circuit and a reception circuit; and a duplexer comprising:

a transmission filter disposed between a transmission signal input port and a

transmission/reception signal input/output port; and

a reception filter disposed between the transmission/reception signal input/output port and a reception signal output port,

wherein at least one of said transmission filter and said reception filter includes a plurality of coaxial resonators, each coaxial resonator comprising:

an inner conductor formed on an outer surface of a columnar element;

a dielectric element having a hole formed therein, the columnar element being disposed in the hole; and

an outer conductor formed on an outer surface of said dielectric element; and

an input/output device coupled to a predetermined coaxial resonator of said plurality of coaxial resonators,

said input/output device being coupled to a corresponding one of said ports.

12. A communication device comprising:

a high-frequency circuit comprising at least one of a transmission circuit and a reception circuit, said high-frequency circuit comprising:

a plurality of coaxial resonators, each coaxial resonator comprising:

an inner conductor formed on an outer surface of a columnar element;

a dielectric element having a hole formed therein, the columnar element being disposed in the hole; and

an outer conductor formed on an outer surface of said dielectric element; and

an input/output device coupled to a predetermined coaxial resonator of said plurality of coaxial resonators.

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